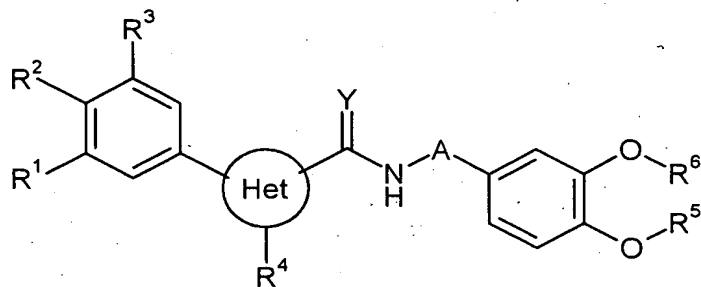


**Patent claims**

1. An amide of the formula (I)



(I)

in which

- 5  $R^1$ ,  $R^2$ , and  $R^3$  are identical or different and independently of one another represent hydrogen, halogen, cyano, nitro,

in each case straight-chain or branched alkyl, alkoxy, alkylthio, alkylsulfinyl or alkylsulfonyl having in each case 1 to 8 carbon atoms;

- 10 in each case straight-chain or branched alkenyl, alkynyl, alkenyloxy or alkynyloxy having in each case 2 to 6 carbon atoms;

in each case straight-chain or branched haloalkyl, haloalkoxy, haloalkylthio, haloalkylsulfinyl or haloalkylsulfonyl having in each case 1 to 6 carbon atoms and 1 to 13 identical or different halogen atoms;

- 15 in each case straight-chain or branched haloalkenyl or haloalkenyloxy having in each case 2 to 6 carbon atoms and 1 to 13 identical or different halogen atoms;

in each case straight-chain or branched alkylamino, dialkylamino, alkylcarbonyl, alkoxy carbonyl, hydroximinoalkyl or alkoximinoalkyl having in each case 1 to 6 carbon atoms in the individual alkyl moieties;

cycloalkyl having 3 to 6 carbon atoms,

- 20 where

$R^1$ ,  $R^2$ , and  $R^3$  do not simultaneously represent hydrogen, or

$R^1$  and  $R^2$  together with the carbon atoms to which they are attached form a carbocyclic ring,

Het represents an unsubstituted or substituted five-membered aromatic heterocyclic ring,

$R^4$  represents hydrogen, halogen, cyano, alkyl having 1 to 8 carbon atoms, alkenyl or alkynyl having 2 to 8 carbon atoms or haloalkyl having 1 to 8 carbon atoms and 1 to 9 halogen atoms,

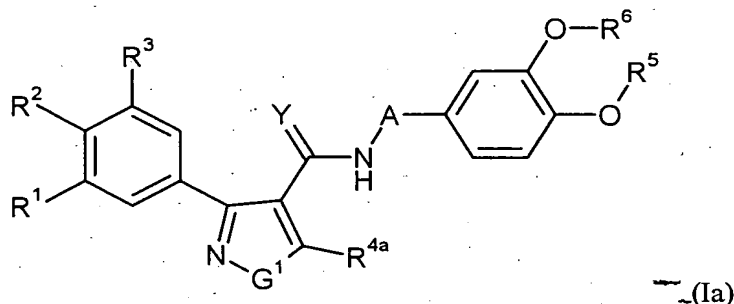
5  $R^5$  and  $R^6$  are identical or different and independently of one another represent unsubstituted or in each case halogen- or cyano-substituted alkyl, alkoxyalkyl having in each case 1-8 carbon atoms in the respective alkyl chains or alkenyl or alkynyl having in each case 2-8 carbon atoms or cycloalkyl having 3-8 carbon atoms or represent unsubstituted or substituted arylalkyl having 1-8 carbon atoms in the alkyl chain,

10 A represents alkanediyl or cycloalkanediyl and

Y represents oxygen or sulfur.

2. The compound of the formula (I) as claimed in claim 1, from the group of the compounds of the formula (Ia),

a)



in which

$R^1$ ,  $R^2$ , and  $R^3$  are identical or different and independently of one another represent hydrogen, fluorine, chlorine, bromine, cyano, nitro, methyl, ethyl, n- or i-propyl; n-, i-, s- or t-butyl, n-pentyl, n-hexyl, n-heptyl, methoxy, ethoxy, n- or i-propoxy, methylthio, ethylthio, n- or i-propylthio, methylsulfinyl, ethylsulfinyl, methylsulfonyl or ethylsulfonyl, trifluoromethyl, trifluoroethyl, difluoromethoxy, trifluoromethoxy, difluorochloromethoxy, trifluoroethoxy, difluoromethylthio, difluoro-chloromethylthio, trifluoromethylthio, trifluoromethylsulfinyl or trifluoro-methylsulfonyl, dimethylamino, diethylamino, acetyl, propionyl, methoxycarbonyl, ethoxycarbonyl, hydroximinomethyl, hydroximinoethyl, methoximinomethyl, ethoximinomethyl, methoximinoethyl or ethoximinoethyl, cyclopropyl, cyclobutyl, cyclopentyl or cyclohexyl, or

$R^1$  and  $R^2$  together with the carbon atoms to which they are attached form a carbocyclic ring having 5 or 6 ring members,

where  $R^1$ ,  $R^2$ , and  $R^3$  do not simultaneously represent hydrogen,

$R^{4a}$  represents hydrogen, fluorine, chlorine, bromine, cyano, methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl, n-pentyl, n-hexyl, n-heptyl, allyl, propargyl or trifluoromethyl,

$R^5$  and  $R^6$  are identical or different and independently of one another represent methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl, n-pentyl, n-hexyl, n-heptyl,

allyl, methylallyl, crotonyl, propynyl or butynyl or cyanomethyl,

or represent optionally hydrogen-, fluorine-, chlorine-, bromine-, cyano-, nitro-, methyl-, ethyl-, n- or i-propyl-, n-, i-, s- or t-butyl-, n-pentyl-, n-hexyl-, n-heptyl-, methoxy-, ethoxy-, n- or i-propoxy-, methylthio-, ethylthio-, n- or i-propylthio-, methylsulfinyl-, ethylsulfinyl-, methylsulfonyl- or ethylsulfonyl-, trifluoromethyl-, trifluoroethyl-, difluoromethoxy-, trifluoromethoxy-, difluorochloromethoxy-, trifluoroethoxy-, difluoromethylthio-, difluorochloromethylthio-, trifluoromethylthio-, trifluoromethylsulfinyl- or trifluoromethylsulfonyl-, acetyl-, propionyl-, methoxycarbonyl-, ethoxycarbonyl-, hydroximinomethyl-, hydroximinoethyl-, methoximinomethyl-, ethoximinomethyl-, methoximinoethyl- or ethoximinoethyl-, cyclopropyl-, cyclobutyl-, cyclopentyl- or cyclohexyl- substituted benzyl,

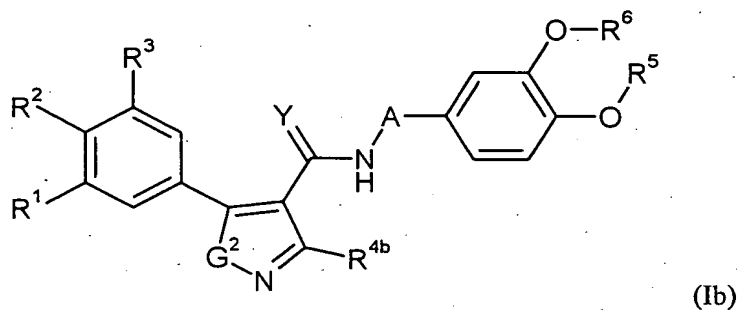
A represents methanediyl, ethane-1,1-diyl, ethane-1,2-diyl, propane-1,1-diyl, propane-1,2-diyl, propane-1,3-diyl, propane-2,2-diyl, butane-1,1-diyl, butane-1,2-diyl, butane-1,3-diyl, butane-1,4-diyl, butane-2,2-diyl, butane-2,3-diyl, 1,1-diethylethane-1,2-diyl, cyclopropane-1,1-diyl or cyclopropane-1,2-diyl,

Y represents oxygen or sulfur and

$G^1$  represents oxygen, sulfur or  $N-R^{7a}$ , where

$R^{7a}$  represents hydrogen, methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl;

b) compounds of the formula (Ib),



in which

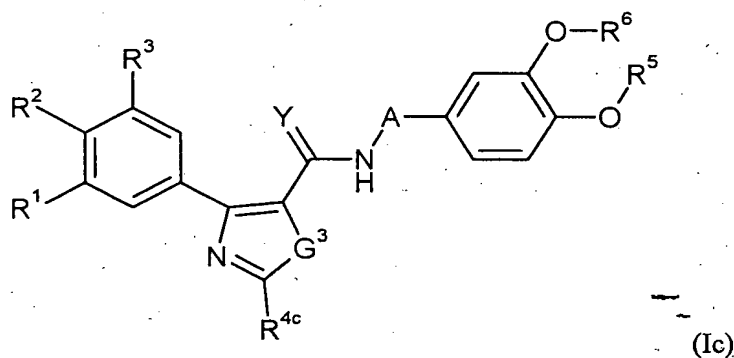
A, R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>5</sup>, R<sup>6</sup> and Y are as defined in formula (Ia),

R<sup>4b</sup> represents hydrogen, fluorine, chlorine, bromine, cyano, methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl, n-pentyl, n-hexyl, n-heptyl, allyl, propargyl or trifluoromethyl,

G<sup>2</sup> represents oxygen, sulfur or N-R<sup>7b</sup>, where

R<sup>7b</sup> represents methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl;

c) compounds of the formula (Ic),



in which

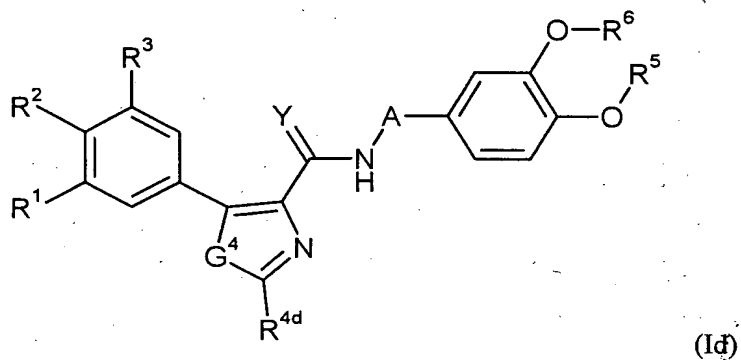
A, R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>5</sup>, R<sup>6</sup> and Y are as defined in formula (Ia),

R<sup>4c</sup> represents hydrogen, fluorine, chlorine, bromine, cyano, methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl, n-pentyl, n-hexyl, n-heptyl, allyl, propargyl or trifluoromethyl,

G<sup>3</sup> represents oxygen, sulfur or N-R<sup>7c</sup>, where

R<sup>7c</sup> represents hydrogen, methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl;

d) compounds of the formula (Id),



in which

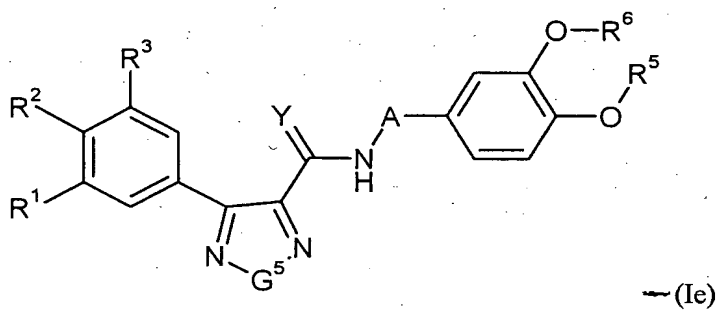
A, R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>5</sup>, R<sup>6</sup> and Y are as defined in formula (Ia),

R<sup>4d</sup> represents hydrogen, methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl,

G<sup>4</sup> represents oxygen, sulfur or N-R<sup>7d</sup>, where

R<sup>7d</sup> represents methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl;

e) compounds of the formula (Ie),



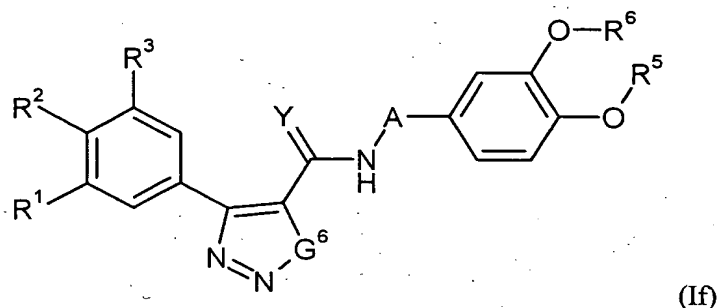
in which

A, R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>5</sup>, R<sup>6</sup> and Y are as defined in formula (Ia),

G<sup>5</sup> represents oxygen, sulfur or N-R<sup>7e</sup>, where

R<sup>7e</sup> represents hydrogen, methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl;

f) compounds of the formula (If),



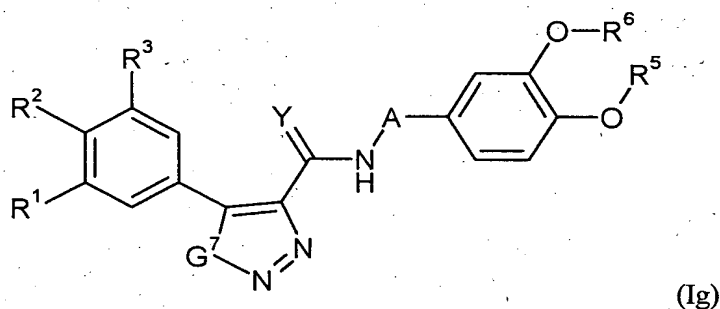
in which

A, R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>5</sup>, R<sup>6</sup> and Y are as defined in formula (Ia),

G<sup>6</sup> represents oxygen, sulfur or N-R<sup>7f</sup>, where

R<sup>7f</sup> represents hydrogen, methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl and

g) compounds of the formula (Ig),



in which

A, R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>5</sup>, R<sup>6</sup> and Y are as defined in formula (Ia),

G<sup>7</sup> represents oxygen, sulfur or N-R<sup>7g</sup>, where

R<sup>7g</sup> represents methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl.

3. The compound of the formulae (Ia) to (Ig) as claimed in claim 2, where the symbols are as defined below:

R<sup>1</sup>, R<sup>2</sup>, and R<sup>3</sup> are identical or different and independently of one another also particularly preferably represent hydrogen, fluorine, chlorine, bromine, cyano, nitro, methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl, n-pentyl, n-hexyl, n-heptyl, methoxy, ethoxy, n- or i-propoxy, methylthio, ethylthio, n- or i-propylthio, methylsulfinyl, ethylsulfinyl, methylsulfonyl or ethylsulfonyl, trifluoromethyl, trifluoroethyl, difluoromethoxy, trifluoromethoxy, difluorochloromethoxy, trifluoroethoxy, di-

5 fluoromethylthio, difluorochloromethylthio, trifluoromethylthio, trifluoromethylsulfinyl or trifluoromethylsulfonyl, dimethylamino, diethylamino, acetyl, propionyl, methoxycarbonyl, ethoxycarbonyl, hydroximinomethyl, hydroximinoethyl, methoximinomethyl, ethoximinomethyl, methoximinomethyl or ethoximinomethyl, cyclopropyl, cyclobutyl, cyclopentyl or cyclohexyl, or

$R^1$  and  $R^2$  together with the carbon atoms to which they are attached form a carbocyclic ring having 5 or 6 ring members,

$R^1$ ,  $R^2$ , and  $R^3$  do not simultaneously represent hydrogen,

10 A particularly preferably represents methanediyl, ethane-1,1-diyl, ethane-1,2-diyl, propane-1,1-diyl, propane-1,2-diyl, propane-1,3-diyl or propane-2,2-diyl,

Y particularly preferably represents oxygen,

$R^5$  and  $R^6$  are identical or different and independently of one another particularly preferably represent methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl, n-pentyl, n-hexyl, n-heptyl, allyl, methylallyl, crotonyl, propynyl or butynyl or cyanomethyl,

15 a) in formula (Ia)

$R^{4a}$  represents hydrogen, methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl, n-heptyl, trifluoromethyl, chlorine or cyano and

$G^1$  represents oxygen, sulfur or  $N-R^{7a}$ , where

$R^{7a}$  represents hydrogen, methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl;

20 b) in formula (Ib)

$R^{4b}$  represents hydrogen, methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl, trifluoromethyl, chlorine or cyano and

$G^2$  represents oxygen, sulfur or  $N-R^{7b}$ , where

$R^{7b}$  represents methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl;

25 c) in formula (Ic)

$R^{4c}$  represents hydrogen, methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl, n-heptyl, trifluoromethyl, chlorine or cyano and

$G^3$  represents oxygen, sulfur or  $N-R^{7c}$ , where

$R^{7c}$  represents hydrogen, methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl;

d) in formula (Id)

$R^{4d}$  represents hydrogen, methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl, n-heptyl, trifluoromethyl, chlorine or cyano and

5  $G^4$  represents oxygen, sulfur or  $N-R^{7d}$  where

$R^{7d}$  represents methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl;

e) in formula (Ie)

$G^5$  represents oxygen, sulfur or  $N-R^{7e}$ , where

$R^{7e}$  represents hydrogen, methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl;

10 f) in formula (If)

$G^6$  represents oxygen, sulfur or  $N-R^{7f}$ , where

$R^{7f}$  represents hydrogen, methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl;

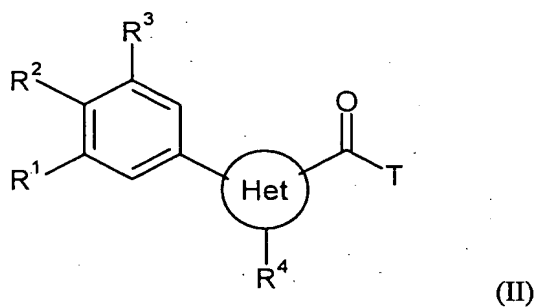
g) in formula (Ig)

$G^7$  represents oxygen, sulfur or  $N-R^{7g}$ , where

15  $R^{7g}$  represents methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl.

4. A process for preparing amides of the formula (I), wherein

a) carboxylic acid derivatives of the general formula (II)



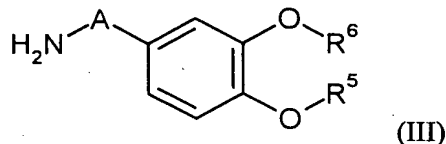
in which

20  $R^1$ ,  $R^2$ ,  $R^3$  and  $R^4$  are as defined in formula (I) in claim 1 and



T represents hydroxyl, halogen or alkoxy

are reacted with an amine of the general formula (III)



in which

5  $R^5$ ,  $R^6$  and A are as defined in formula (I) in claim 1

- or an acid addition complex thereof -

if appropriate in the presence of an acid acceptor, if appropriate in the presence of a condensing agent, if appropriate in the presence of a catalyst and if appropriate in the presence of a diluent

10 and

b) if appropriate (if Y in formula (I) is S) reacted with a sulfurizing agent, if appropriate in the presence of a diluent.

5. A composition for controlling unwanted microorganisms, characterized in that it comprises at least one amide of the formula (I) as claimed in one or more of claims 1 to 3, in addition to extenders and/or surfactants.

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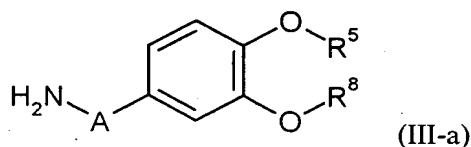
6. The use of amides of the formula (I) as claimed in one or more of claims 1 to 3 for controlling unwanted microorganisms.

7. A method for controlling unwanted microorganisms, characterized in that amides of the formula (I) as claimed in one or more of claims 1 to 3 are applied to the unwanted microorganisms and/or their habitat.

20

8. A process for preparing compositions for controlling unwanted microorganisms, characterized in that amides of the formula (I) as claimed in one or more of claims 1 to 3 are mixed with extenders and/or surfactants.

9. An amine of the formula



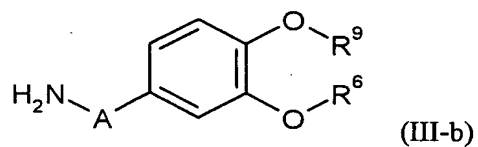
25

in which

A and R<sup>5</sup> are as defined in formula (I) in claim 1 and

R<sup>8</sup> represents allyl, propargyl, 2-butynyl or cyanomethyl

or (III-b)



in which

A and R<sup>6</sup> are as defined in formula (I) in claim 1 and

R<sup>9</sup> represents allyl, propargyl, 2-butynyl or cyanomethyl.